



**OPERATORS AND SERVICE  
MANUAL**  
for  
**SEMI-AUTOMATIC RV SYSTEM**

82-L0331 Rev. 1  
July 2003

## TABLE OF CONTENTS

---

OPERATION AND MAINTENANCE.....	1
OPERATION CAUTION NOTES.....	1
BEFORE YOU OPERATE THE SYSTEM .....	2
SELECTING A SITE .....	2
LEVELING PROCEDURES.....	2
CONTROL TOUCH PAD DIAGRAM.....	3
JACK RETRACT PROCEDURES.....	3
AUTOMATIC SAFETY SHUTOFF FEATURE.....	3
DRIVE AWAY PROTECTION SYSTEM.....	4
RECOMMENDED FLUIDS.....	4
PREVENTATIVE MAINTENANCE.....	4
ORDERING INFORMATION.....	5
REPLACEMENT PARTS	
3 JACK SYSTEM.....	6
4 JACK SYSTEM.....	7
WIRING DIAGRAM.....	8
CONTROL SYSTEM.....	9
PUMP DIAGRAM.....	11
REPLACEMENT JACKS .....	12
VALVE BLOCK DIAGRAM .....	14
TROUBLESHOOTING.....	15
WARRANTY.....	16

## **OPERATION AND MAINTENANCE**

- The Power Gear leveling system on your coach is designed and built to give you years of trouble free leveling and stabilizing operation. The Power Gear system reflects the latest state of the art technology in both hydraulic and electronic components. **Please read and study this manual before you operate the leveling system.**

**SYSTEM DESCRIPTION** - The Power Gear semi-automatic electro-hydraulic leveling system consists of the following major components:

- (A) Power Gear supplies spring return jacks rated at a lifting capacity appropriate for your coach. Each jack has a large diameter shoe for maximum surface area on soft surfaces.
- (B) Each jack is powered from a central 12VDC motor/pump assembly which also includes the hydraulic oil reservoir tank, control valve manifold, and solenoid valves.
- (C) The system is controlled by the solid-state touch pad located by the driver and a control box mounted on the top of a storage bin, centrally located in the coach.

<b>WARNING</b>
----------------

**DO NOT USE LEVELING JACKS (OR AIR SUSPENSION) TO SUPPORT VEHICLE WHILE UNDER COACH OR CHANGING TIRES. THE HYDRAULIC LEVELING SYSTEM IS DESIGNED AS A LEVELING SYSTEM ONLY. DO NOT USE AS A JACK OR IN CONJUNCTION WITH A JACK. IT IS HIGHLY RECOMMENDED THAT, SHOULD A TIRE CHANGE BE REQUIRED, A KNOWLEDGEABLE AND TRAINED PROFESSIONAL PERFORM IT. ATTEMPTS TO CHANGE TIRES WHILE SUPPORTING THE VEHICLE WITH THE HYDRAULIC SYSTEM COULD RESULT IN DAMAGE TO THE MOTOR HOME AND RISK CAUSING SERIOUS INJURY OR DEATH.**

## **OPERATION CAUTION NOTES!**

- CAUTION** - CHECK THAT POTENTIAL JACK CONTACT LOCATIONS ARE CLEAR OF OBSTRUCTIONS OR DEPRESSIONS BEFORE OPERATION.
- CAUTION** - KEEP PEOPLE CLEAR OF COACH PRIOR TO TURNING THE LEVELING SYSTEM ON AND WHILE LEVELING SYSTEM IS IN USE.
- CAUTION** - NEVER EXPOSE HANDS OR OTHER PARTS OF THE BODY NEAR HYDRAULIC LEAKS. HIGH PRESSURE OIL LEAKS MAY CUT AND PENETRATE THE SKIN CAUSING SERIOUS INJURY.
- CAUTION** - PARK COACH ON REASONABLY SOLID SURFACE OR JACKS MAY SINK INTO GROUND. ON EXTREMELY SOFT SURFACES, USE LOAD DISTRIBUTION PADS UNDER EACH JACK.
- CAUTION** - NEVER LIFT THE WHEELS OFF THE GROUND TO LEVEL THE COACH.

## **BEFORE YOU OPERATE THE SYSTEM**

The leveling system should only be operated under the following conditions:

- (A) The coach is parked on a reasonably level surface.
- (B) The coach "parking brake" is engaged.
- (C) The coach transmission is engaged in "Park" (or "Neutral" for a diesel coach).
- (D) The coach engine is running.

## **SELECTING A SITE**

When the coach is parked on an excessive slope, the leveling requirements may exceed the jack lift stroke capability. When this occurs, the 4 orange jack LEDs and the green "POWER GEAR LEVEL" LED in the center will blink together. The coach must be moved to a more level surface before the leveling jacks are deployed. On the contrary, if the green "POWER GEAR LEVEL" LED in the center is on and/or blinking by itself, it means the coach is already level. You may, if you wish, operate the jacks anyway to act as a stabilizer.

## **LEVELING PROCEDURES**

STEP 1 - Push the "On/Off" button on the touch pad. The system is now operational and some of the electronic level LEDs will turn on and/or flash.

STEP 2 - Check to see that the "engage park brake" LED is not flashing.

**NOTE: Engage the parking brake if the "engage park brake" LED is flashing.**

STEP 3 - Check to see that the "On/Off" LED and "Wait" LED are not flashing together.

**NOTE: Put the coach into Park (or neutral for a diesel coach) if the "On/Off" and "Wait" LEDs are flashing together.**

STEP 4 - Push the "Front" jack button until the front jacks contact the ground. After the jacks contact the ground continue to depress the "Front" jack button for 1-3 seconds lifting the front of the coach off of the suspension (not lifting the wheels off of the ground).

STEP 5 - Push the "Rear" jack button until the rear jacks contact the ground.

STEP 6 - Observe the "Front" and "Rear" orange electronic level LEDs (arrows). Push and hold the corresponding button that has the LED on. The controls will automatically stop the pump for 5 seconds once a front-to-rear level has been attained.

STEP 7 - Observe the "Left" and "Right" orange electronic level LEDs (arrows). Push and hold the corresponding button that has the LED on. The controls will automatically stop the pump for 5 seconds once a side-to-side level has been attained.

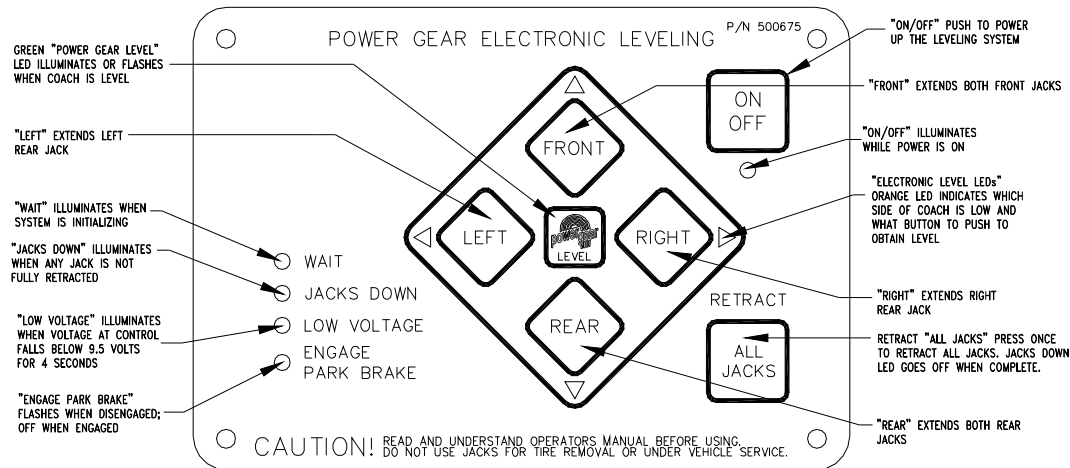
**NOTE (Step 6 and Step 7): If operator continues to push and hold the button for more than 5 seconds after the LED has gone out the system will be overridden. This will cause the pump motor to begin running again, which in turn will raise the coach.**

STEP 8 - The green "Power Gear Level" LED in the center should now be lit. Repeat steps 6 and 7 if this is not the case.

**CAUTION:** Never lift the wheels off the ground when leveling the motorhome.

**NOTE:** If the "Wait" LED is ever flashing by itself, it means the control is busy and you cannot operate the jacks. After a short period of time (from 5 to 30 seconds), the "Wait" LED will go off again, and you can resume operation as normal.

STEP 2 - Push the "ON/OFF" button to de-energize the system.



### **JACK RETRACT PROCEDURES**

**NOTE:** Coach ignition must be on.

STEP 1 - Energize the system by pushing the "On/Off" button on touch pad. The "On/Off" and "Jacks Down" LEDs will be lit.

STEP 2 - Push and release the "Retract All Jacks" button. All the jacks will start to retract and return to the "full retract position" automatically. As the jacks approach the "full retract position," the "Wait" LED will flash for about 30 seconds. This is to ensure that the jacks retract all the way. During this 30 second wait period, the touch pad cannot be turned off. When all of the jacks return to the "full retract position," the "Jacks Down" LED will go off.

STEP 3 - When the "Jacks Down" LED turns off, push the "On/Off" button on the touch pad to de-energize the system. After a visual inspection underneath the coach (to verify that all of the jacks are fully retracted), you may proceed to travel.

### **AUTOMATIC SAFETY SHUTOFF FEATURE**

If the touch panel is left on and inactive for four minutes it will shut off automatically.

To reset the system the coach ignition must be turned off, then back on.

## **DRIVE AWAY PROTECTION SYSTEM**

If the ignition is in the "RUN" position, the jacks are down, and the operator takes the transmission out of neutral or park, or releases the parking brake, all of the LEDs will flash and the alarm beeper will activate. The system will then automatically retract the jacks until the jacks are fully retracted. During this time the touch pad cannot be turned off.

## **RECOMMENDED HYDRAULIC FLUIDS FOR YOUR POWER GEAR LEVELING SYSTEM**

In most applications, Type A automatic transmission fluid (ATF, Dexron III, etc.,) will work satisfactorily. Mercon V is also recommended as an alternative fluid for Power Gear leveling systems

If operating in cold temperatures (less than -10° F) the jacks may extend and retract slowly.

For cold weather operation, fluid specially-formulated for low temperatures may be desirable. Mobil DTE 11M, Texaco Rando HDZ-15HVI, Kendall Hyden Glacial Blu, or any Mil. Spec. H5606 hydraulic fluids are recommended for cold weather operation.

Please consult factory before using any other fluids.

## **PREVENTATIVE MAINTENANCE PROCEDURES**

### **1. Change fluid every 36 months.**

- Fill the reservoir with the jacks in the fully **retracted** position.
- On 1998 - PRESENT model year coaches, the fluid should be within 1/4 inch of the fill port lip and checked only with all jacks retracted. On pre-1998 model year coaches the fluid level should be approximately 1/8 inch on the dipstick and checked only with all jacks retracted.

### **2. Check the fluid level every month.**

3. Inspect and clean all hydraulic pump electrical connections every 12 months.

4. Remove dirt and road debris from jacks as needed.

### **WARNING:**

**Your coach should be supported at both front and rear axles with jack stands before working underneath.**

5. If jacks are down for extended periods, it is recommended to spray exposed chrome rods with a silicone lubricant every seven days for protection. If your coach is located in a salty environment, it is recommended to spray every 2 to 3 days.

**REQUIRED INFORMATION FOR ORDERING PARTS FROM YOUR LOCAL DEALER**

When ordering parts, please provide the following information:

- 1) Your Name
- 2) Company Name
- 3) Phone Number
- 4) Shipping Address
- 5) Billing Address
- 6) Purchase Order Number

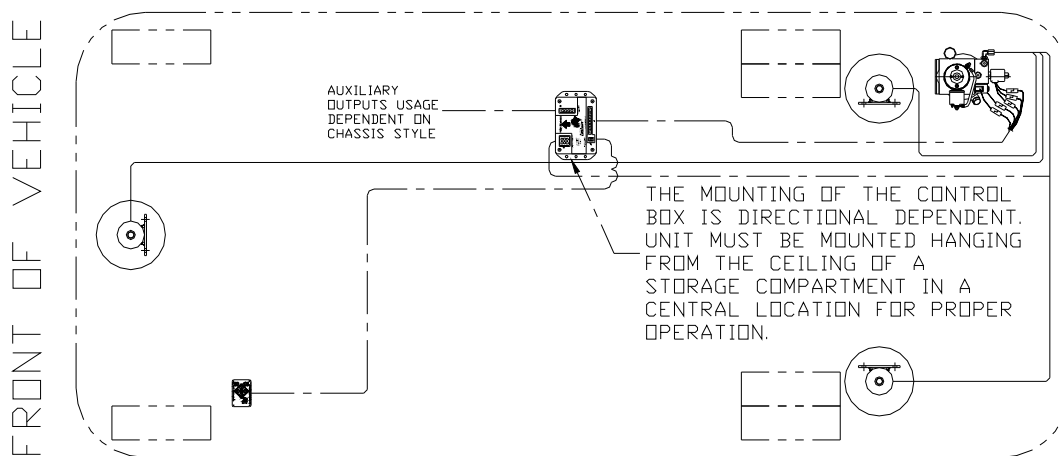
For each part needed

- 1) Coach
  - I.D.#
  - Make
  - Model
  - Wheel Base
  - Mileage
- 2) Part Number
- 3) Description
- 4) Quantity

**ALL REPAIRS MUST BE MADE BY AN AUTHORIZED SERVICE CENTER. SYSTEMS THAT HAVE BEEN TAMPERED WITH, MODIFIED, ADJUSTED OR REPAIRED BY ANY PARTY OTHER THAN AN AUTHORIZED SERVICE CENTER WILL VOID ALL WARRANTIES.**

## GENERAL ARRANGEMENT

## 3 JACK SYSTEM



ITEM	PART NO	DESCRIPTION	QTY
1	500675	TOUCHPAD CONTROL - SEMI-AUTO SYSTEM	1
2	500674	CONTROL CENTER - SEMI-AUTO. SYSTEM	1
3	NOTE 1	PUMP / MOTOR ASSEMBLY	1
4	NOTE 2	REAR JACKS	2
5	NOTE 2	FRONT JACK	1

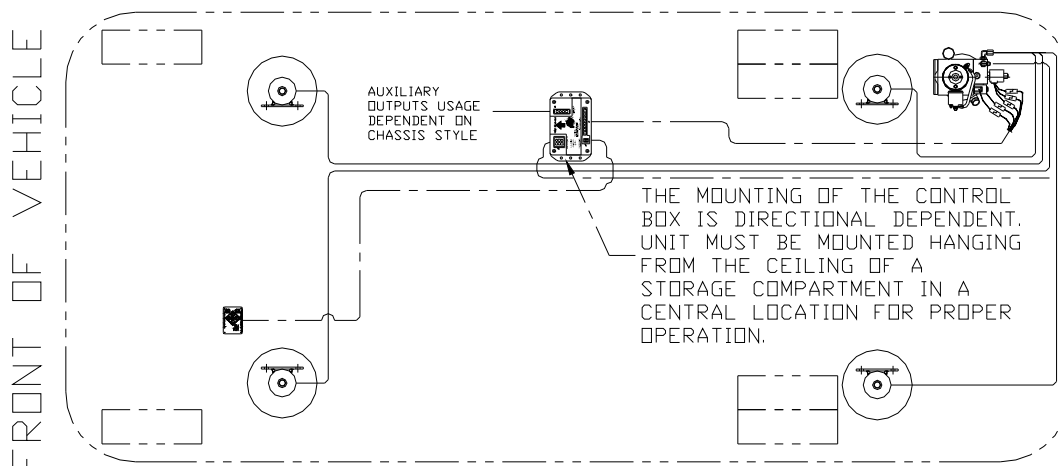
NOTE 1: THE PUMP / MOTOR ASSEMBLY AND HOSES USED VARY BY COACH MODEL. PLEASE REFER TO YOUR COACH MAKE, MODEL AND YEAR WHEN ORDERING.

NOTE 2: THE PARTICULAR JACKS USED VARY BY COACH MODEL. PLEASE INDICATE THE MODEL AND YEAR OF YOUR COACH TO IDENTIFY WHICH JACKS ARE USED.



## GENERAL ARRANGEMENT

## 4 JACK SYSTEM

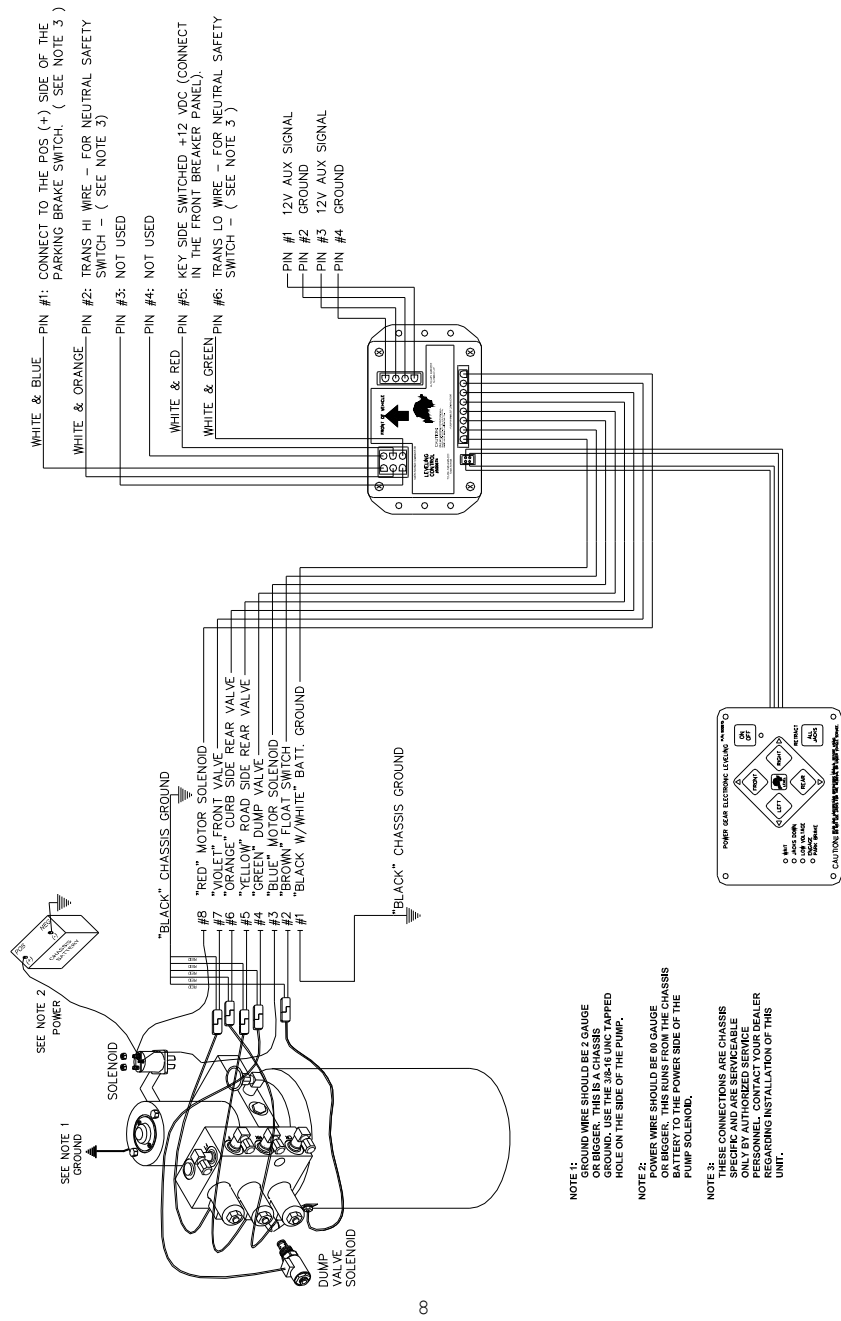


ITEM	PART NO	DESCRIPTION	QTY
1	500675	TOUCHPAD CONTROL - SEMI-AUTO SYSTEM	1
2	500674	CONTROL CENTER - SEMI-AUTO. SYSTEM	1
3	NOTE 1	PUMP / MOTOR ASSEMBLY	1
4	NOTE 2	REAR JACKS	2
5	NOTE 2	FRONT JACK	2

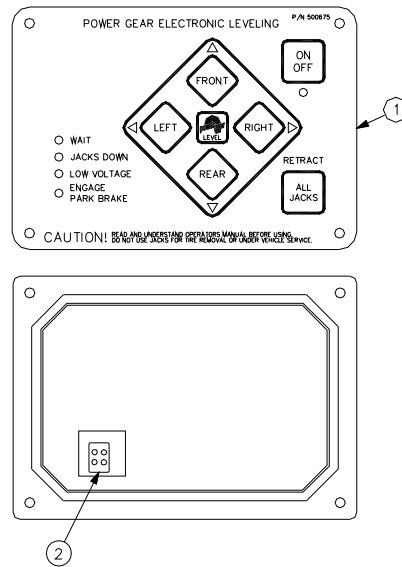
NOTE 1: THE PUMP / MOTOR ASSEMBLY AND HOSES USED VARY BY COACH MODEL. PLEASE REFER TO YOUR COACH MAKE, MODEL AND YEAR WHEN ORDERING.

NOTE 2: THE PARTICULAR JACKS USED VARY BY COACH MODEL. PLEASE INDICATE THE MODEL AND YEAR OF YOUR COACH TO IDENTIFY WHICH JACKS ARE USED.

WIRING DIAGRAM



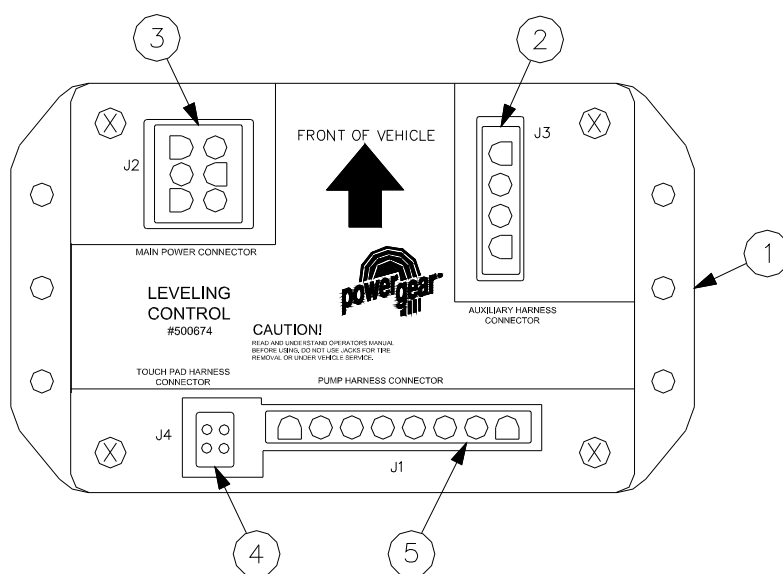
## SEMI-AUTOMATIC TOUCH PAD CONTROL



<u>ITEM</u>	<u>NOTE</u>	<u>P/N</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>APPLICATION</u>
1		500675S	SEMI-AUTOMATIC TOUCH PAD	1	03/2002 - Present
2	N		TOUCH PAD WIRE HARNESS	1	03/2002 - Present

N - NOT SHOWN

## SEMI-AUTOMATIC CONTROL BOX

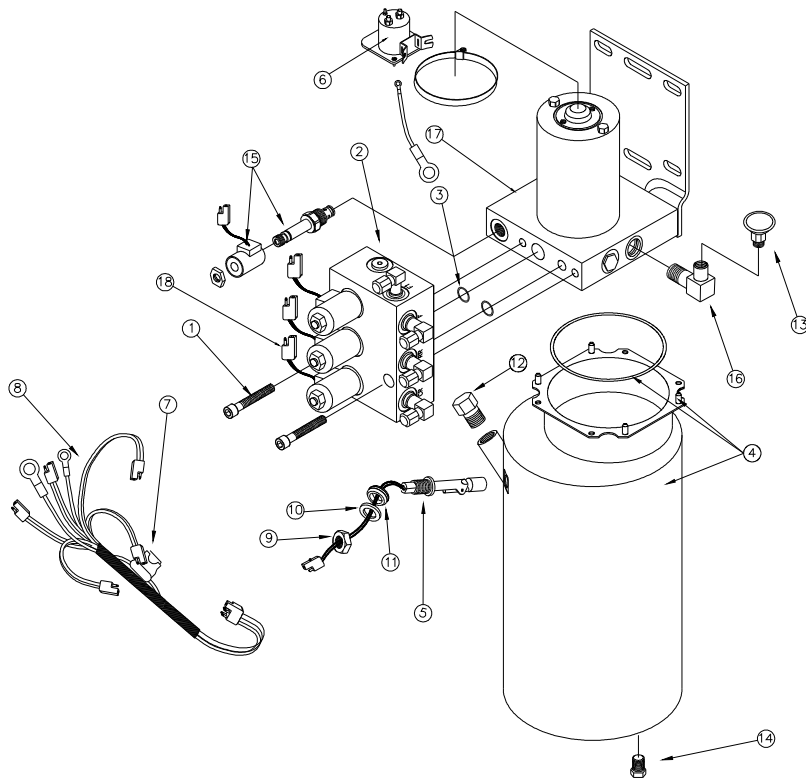


<u>ITEM</u>	<u>NOTE</u>	<u>P/N</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>APPLICATION</u>
1		500674S	SEMI-AUTOMATIC CONTROL BOX	1	03/2002 - Present
2	N	500663	AUXILIARY HARNESS	1	03/2002 - Present
3	N	5020-XXX	MAIN POWER COACH HARNESS	1	03/2002 - Present
4	N	5019-XXX	TOUCH PAD WIRE HARNESS	1	03/2002 - Present
5	N	500661	PUMP HARNESS	1	03/2002 - Present

**N - NOT SHOWN**

## PUMP DIAGRAM

---

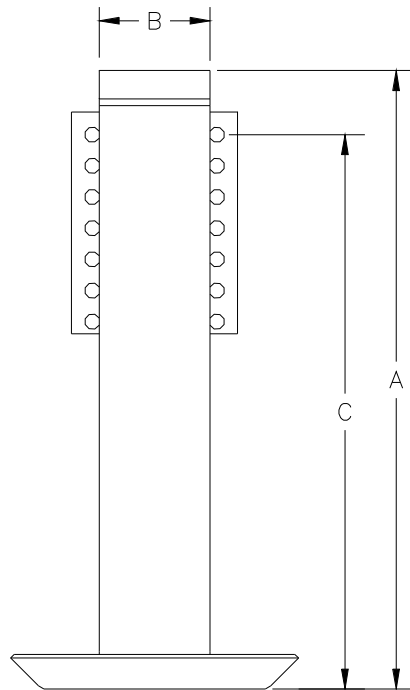


ITEM	P/N	DESCRIPTION	QTY EACH	APPLICATION
1-18	see note	COMPLETE POWER UNIT	1	2001 - PRESENT
1, 2, 3	see note	VALVE BLOCK ASSEMBLY	1	SEE PAGE 9
4, 12, 14	see note	TANK, FILL PLUG, DRAIN PLUG	1	2001 - PRESENT
12	07-1238	FILL PLUG	1	2001 - PRESENT
14	07-1239	DRAIN PLUG	1	2001 - PRESENT
5, 9, 10, 11	14-1136	FLOAT SWITCH ASSEMBLY	1	2001 - PRESENT
7, 8	500661	PUMP HARNESS	1	2001 - PRESENT
15	500633	DUMP VALVE SOLENOID	1	2001 - PRESENT
6	500310	MOTOR SOLENOID	1	2001 - PRESENT
13, 16	500511	AIR BREATHER	1	2001 - PRESENT
17	see note	MOTOR/PUMP ASSEMBLY	1	2001 - PRESENT
18	500634	LEG VALVE AND SOLENOID	1	2001 - PRESENT

NOTE: Contact authorized service facility or Power Gear for correct part number.

ORDER BY MODEL AND YEAR

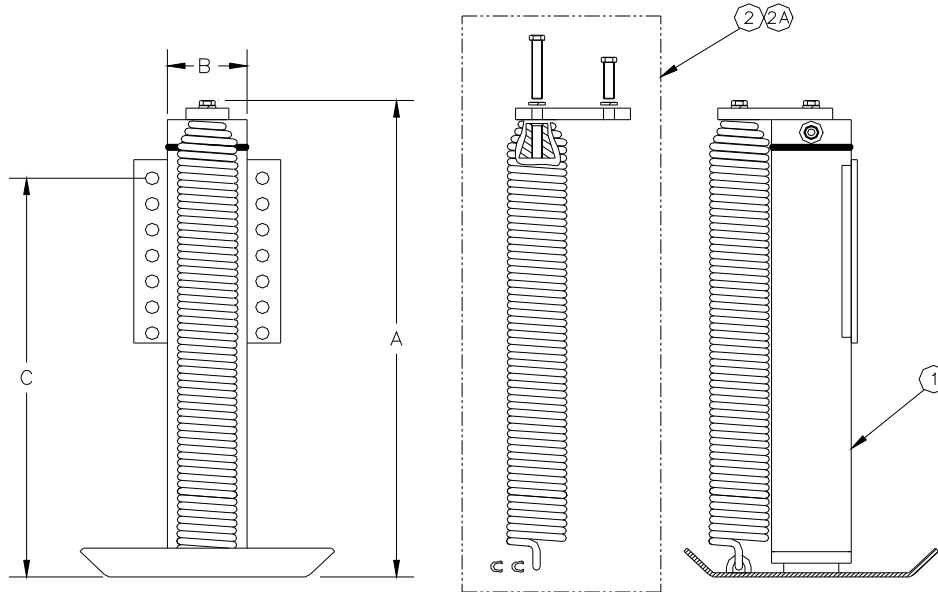
## REPLACEMENT JACKS (LEGS)



ITEM	P/N	NOTE	DESCRIPTION	QTY EACH	APPLICATION
1	500145	N	16,000 LBS. JACK (LEG) ASSY. 16" STROKE A=22-5/16" B=4" C=20"	1	1994 - PRESENT MODEL YEAR
1	500385TH	N	12,000 LBS. JACK (LEG) ASSY. 16" STROKE A=22-5/16" B=3-5/8" C=20-1/8"	1	1999 - PRESENT MODEL YEAR
1	500620	N	24,000 LBS. JACK (LEG) ASSY. 16" STROKE A=22-3/8" B=4-1/2" C=20-3/32"	1	1999 - PRESENT MODEL YEAR

**N - ORDER BY MODEL, YEAR, AND WHEEL BASE OR BY DIMENSIONS A, B, C  
NO SERVICEABLE PARTS, ORDER COMPLETE JACK (LEG)**

## REPLACEMENT JACKS (LEGS)



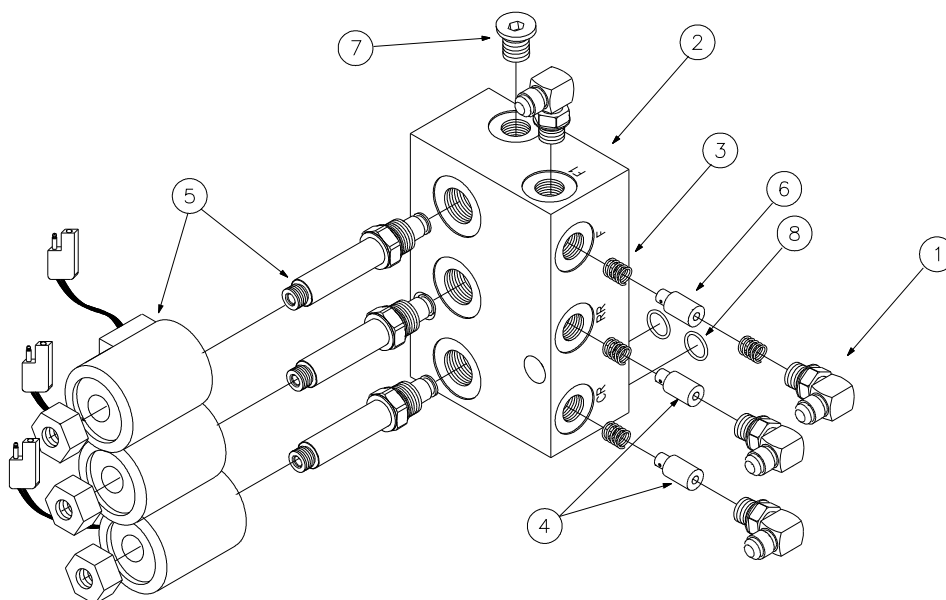
ITEM	P/N	NOTE	DESCRIPTION	QTY EACH	APPLICATION
1	500146	N	9,000 LBS. JACK (LEG) ASSY. 15" STROKE - A=20-3/4" B=3-1/4" C=17-3/8"	1	1994 - PRESENT MODEL YEAR
1	500235	NN	9,000 LBS. JACK (LEG) ASSY. 12" STROKE - A=18-15/16" B=3-1/4" C=17-3/8"	1	1994 - PRESENT MODEL YEAR
1	500384H	N	6,000 LBS. JACK (LEG) ASSY. 14" STROKE - A=21-5/16" B=2-7/8" C=17-15/16"	1	1999 - PRESENT MODEL YEAR
1	500482H	NN	6,000 LBS. JACK (LEG) ASSY. 12" STROKE - A=18" B=2-5/8" C=15-3/8"	1	1999 - PRESENT MODEL YEAR
2	500094		SPRING KIT FOR 15" STROKE JACK (LEG) ASSY.	1	1994 - PRESENT MODEL YEAR
2A	500252		SPRING KIT FOR 12" STROKE JACK (LEG) ASSY.	1	1994 - PRESENT MODEL YEAR

N - ORDER BY MODEL, YEAR AND WHEEL BASE OR BY DIMENSIONS A, B, C  
NO SERVICEABLE PARTS, ORDER COMPLETE JACK (LEG)

N - INCLUDES ITEM 2 OR 2A

NN - INCLUDES ITEM 2 OR 2A

## JACK (LEG) VALVE ASSEMBLY 2001 - PRESENT



### 3 JACK WITH MANUAL OVERRIDE

ITEM	P/N	DESCRIPTION	QTY EACH	APPLICATION
1, 3, 4	500636S	REAR HOSE CONNECTOR KIT	1	2001 - PRESENT
1, 3, 6	500637S*	FRONT HOSE CONNECTOR KIT	1	2001 - PRESENT
5	500634	LEG VALVE SOLENOID	1	2001 - PRESENT
7		PLUG		
8	500523	O-RING KIT	2	2001 - PRESENT
1-8	500633	VALVE BLOCK ASSEMBLY	1	2001 - PRESENT

\* - "F" PORT HAS TWO SPRINGS

**ORDER BY MODEL AND YEAR**



## TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
System will not turn on and ON/OFF indicator light does not light	Coach ignition not in run position.	Turn ignition to run position.
	Transmission not in neutral or park.	Place transmission in neutral or park.
	Parking brake not set.	Set parking brake.
	Panel has been left on for more than four minutes. Auto time out has occurred.	Turn ignition key off and back on.
Touch pad turns on, but, turns itself off when leg button is pushed.	Low voltage.	Start coach to charge batteries.
Touch pad turns on, but, coach will not level using the automatic feature Jacks down light is on, even though all of the jacks are retracted	Low fluid level	Check fluid level in the reservoir, if fluid is low fill to port rim with recommended fluid. If jacks down light remains on with fluid level full see service center for repair.
Jacks will not extend to ground, pump is running.	No fluid or not enough fluid in reservoir.	Fill reservoir with Dexron III automatic transmission fluid. See page 4.
Any one or two of the jacks will not retract.	Broken spring(s).	Secure jack in retracted position. See service center for repair.
"JACKS DOWN" light does not go out when all jacks are retracted.	Low fluid level.	Fill reservoir to proper level with recommended fluid. See page 4.
Alarm sounds and "JACKS DOWN" light starts flashing while traveling. The jacks are fully retracted.	Low fluid level.	Fill reservoir to proper level with recommended fluid. See page 4.

## POWER GEAR LIMITED WARRANTY

Power Gear warrants to the original retail purchaser that the product will be free from defects in material and workmanship for a period of one (1) year following the retail sales date. Power Gear will, at its option, repair or replace any part covered by this limited warranty which, following examination by Power Gear or its authorized distributors or dealers, is found to be defective under normal use and service. No claims under this warranty will be valid unless Power Gear or its authorized distributor or dealer is notified in writing of such claim prior to the expiration of the warranty period. Warranty is non-transferable.

### **THIS WARRANTY SHALL NOT APPLY TO:**

- Failure due to normal wear and tear, accident, misuse, abuse, or negligence.
- Products which are modified or altered in a manner not authorized by Power Gear in writing.
- Failure due to misapplication of product.
- Telephone, telegraph, teletype or other communication expenses.
- Living or travel expenses of person performing service.
- Overtime labor.
- Failures created by improper installation of the product's slideout system or slideout room to include final adjustments made at the plant for proper room extension/retraction; sealing interface between slideout rooms and side walls; synchronization of inner rails; or improper wiring or ground problems.
- Failures created by improper installation of leveling systems, including final adjustments made at the plant, or low fluid level, wiring or ground problems.
- Replacement of normal maintenance items including lubricants and fuses.

There is no other express warranty other than the foregoing warranty. THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL POWER GEAR BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow the limitations of implied warranties, or the exclusion of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

For service contact your nearest Power Gear authorized warranty service facility or call 1-800-334-4712. Warranty service can be performed only by a Power Gear authorized service facility. This warranty will not apply to service at any other facility. At the time of requesting warranty service, evidence of original purchase date must be presented.

**Power Gear  
1217 East Seventh Street  
Mishawaka, Indiana 46544**

**800/334-4712**